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(19) (CA) **CANADIAN PATENT** (12)

(54) WOUND IRRIGATING DEVICE

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(73) Granted to Squibb (E. R.) & Sons, Inc.
U.S.A.

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No. OF CLAIMS 6

ABSTRACT OF THE DISCLOSURE

A wound irrigating device includes a cover and a rim, the rim being of an adhesive which will adhere to moist body surfaces, the cover and the rim, when in use, defining a closed chamber located over the wound. The device has an entry and an exit port for supply and removal of an irrigating fluid to the wound. The rim itself is, or it may carry a plastics adhesive material which may include a blend of a water-soluble or water-swellable hydrocolloid and a water-insoluble, viscous, elastic binder.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A wound irrigating device including a cover and a rim, the rim being of an adhesive which will adhere to moist body surfaces, the cover and the rim in use defining a closed chamber located over the wound and also defining an entry and an exit port for supply and removal of an irrigating fluid, in which the rim is or carries a plastics adhesive material comprising a blend of a water-soluble or water-swellable hydrocolloid and a water-insoluble, viscous, elastic binder.

2. A device according to Claim 1 in which the cover is of a transparent plastics material.

3. A device according to Claim 1 in which the cover has a transparent panel therein.

4. A device according to Claims 1, 2, or 3 in which the plastics adhesive material is directly secured to the marginal portion of the cover.

5. A device according to Claims 1, 2, or 3 in which there is a ring interposed between the marginal portion of the cover and the plastics adhesive material.

6. A method of making a wound irrigating device which involves bonding a cover directly or indirectly to a rim of plastics adhesive material comprising a

blend of a water-soluble or water-swellable hydrocolloid and a water-insoluble, viscous, elastic binder, and providing in the rim or the cover an entry and an exit port for a fluid.

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This invention relates to a wound irrigating device.

There have been numerous prior proposals for wound irrigating or drainage devices. For example, in British Patent Specification Number 641 061, there is disclosed a transparent convex shield which covers the wound and has inlet and discharge connections for a liquid used to wash or medicate the wound. A gasket of soft rubber is interposed between the skin and the shield. In British Patent Specification Number 1 150 294, there is disclosed a selectively permeable membrane which is laid over the wound and may have liquid inlet and outlet connections. British Patent Specification Number 1 210 746 discloses an appliance for treating sagging breasts. It has a cup of glass or plastics having a soft rubber marginal sleeve, and a tube for entry and exit of water. British Patent Specification Number 1 395 799 discloses a surgical evacuator having a rigid cup and a diaphragm therein for producing a suction. The cup has a marginal flange which engages the body of the patient. In United States Patent Number 3 042 041, there is disclosed a cup which is placed over a wound, in combination with a drainage tube which in use extends into the wound. The interior of the cup is maintained under suction. A rim is provided to engage the skin of the user. United States Patent Number 3 954 105 discloses a drainage system in which a thin pliable sheet of plastics material is adhesively secured to the patient around the wound. A blanket of gelatinous material containing karaya gum is also provided. In United States Patent Number 3 568 675, a surgical dressing is illustrated which has a moulded

plastics cover dome. This is secured to the patient with collodion, or equivalent compounds. An exit tube for drainage is provided. United States Patent Number 2 280 915 discloses a device for irrigating wounds having a special pad construction at its base, and entry and exit orifices for fluid. A suction may be applied to the interior and this enhances the security of attachment to the patient.

Other prior proposals have been made, inter alia, in British Patent Specification Numbers 992424, 1214707, 1384537, and 1457164, and in United States Patent Numbers 2 025 492, 3 026 874, 3 823 720, 3 753 439, 3 908 664, and 3 367 332.

None of these prior proposals are totally satisfactory from the points of view of security of attachment of the device to the patient, and ease and comfort of the patient while the device is being worn. In addition, the use of many of them makes heavy demands on skilled nursing time.

According to the invention, a wound irrigating device includes a cover and a rim, the rim being of an adhesive which will adhere to moist body surfaces, the cover and the rim in use defining a closed chamber located over the wound and also defining an entry and an exit port for supply and removal of an irrigating fluid, in which the rim is or carries a plastics adhesive material comprising a blend of a water-soluble or water-swellable hydro-colloid and a water-insoluble, viscous, elastic binder.

The invention also provides a method of making a wound irrigating device which involves bonding a cover to such a rim, and providing in the rim or in the cover an entry and an exit port for a fluid used as a wound irrigating fluid.

The cover may be of a synthetic plastics material. It may be transparent or it may have a transparent panel therein, so that the wound can be inspected without removing the device from the patient. The cover may be flexible or rigid. The adhesive material used may be as described in British Patent Specification Number 1 088 992. The adhesive may be secured directly to the cover rim or there may be a ring interposed therebetween for ease of manufacture. A drain bag may be secured to the outlet port, and one or more valves may be provided to allow control of the wound irrigation process.

In this Specification, the word "wound" is used to mean any break in the skin of a patient, and specifically includes both wounds caused by accidents or the like and wounds made in the course of surgery.

The invention will be better understood from the following particular and non-limiting description of an example thereof given with reference to the accompanying drawings in which:-

Figure 1 is a plan view of one form of wound irrigating device;

and

Figures 2 and 3 are cross-sections on the lines II-II and III-III respectively of Figure 1.

The device illustrated in Figure 1 includes a flexible cover 10 which may be of a synthetic plastics material such as "*PERSPEX". The cover is slightly domed to enclose a space beneath it and above the wound 12. The cover has a rim 14 to which is attached a layer 16 of a plastics adhesive material comprising a blend of a water-soluble or water swellable hydro-colloid and a water-insoluble, viscous, elastic binder. This is laid directly on the skin 18 of the patient. The adhesive rim material is more fully described in British Patent No. 1,088,092 granted to E.R. Squibb & Sons, Inc. As described in that patent, the adhesive rim material comprises a blend of a water-soluble or water-swellable hydrocolloid and a water-insoluble, viscous elastic binder. Such adhesive material may comprise, as the water soluble or swellable hydrocolloid, polyvinyl alcohol, powdered pectin, gelatin, carboxymethylcellulose, high molecular weight polyethylene glycol, i.e., the solid type of material sold under the trademark "*Carbowax" or carboxypolymethylene or a mixture of two or more of these substances. The viscous elastic binder may be a natural or synthetic gum-like substance such as natural rubber, silicone rubber, acrylonitrile rubber, polyurethane rubber, polyisobutylene, and sucrose acetate isobutylate or a mixture of such substances. The cover and the rim define an entry port 20 and an exit port 22 for irrigating fluid. A conventional D.I. infusion set 24 is illustrated as connected to the entry port 20. It may include means such as a bung 26 whereby a gas such as hydrogen peroxide may be flushed through the device.

An outlet pipe 28 is connected to the exit port 22 and leads, in use, to a closed drainage system. It will be appreciated that a control valve, either manually or remote-

* Trade Mark

ly operable, can be associated with either or both of the entry or exit ports.

A wound irrigating device such as is particularly disclosed and illustrated herein has the following advantages:-

1. It provides a system for localized irrigation of infected wounds with antiseptics or hydrogen peroxide thus removing infected material and promoting the healing process.

2. It reduces the exposure of infected wounds to the atmosphere by eliminating the handling of soggy, wet dressings. Thus, it provides localized barrier nursing around the wound itself.

3. It prevents maceration of surrounding skin by wet dressings.

4. The transparent cover '10' allows rapid inspections of the wound without its exposure to the atmosphere and need for re-dressing.

5. It reduces 'nursing time' and will remain in place for a minimum of 48 hours.

6. It provides an environment enabling assessment of the role of topical antibiotics or antiseptics in the treatment of wound infection.

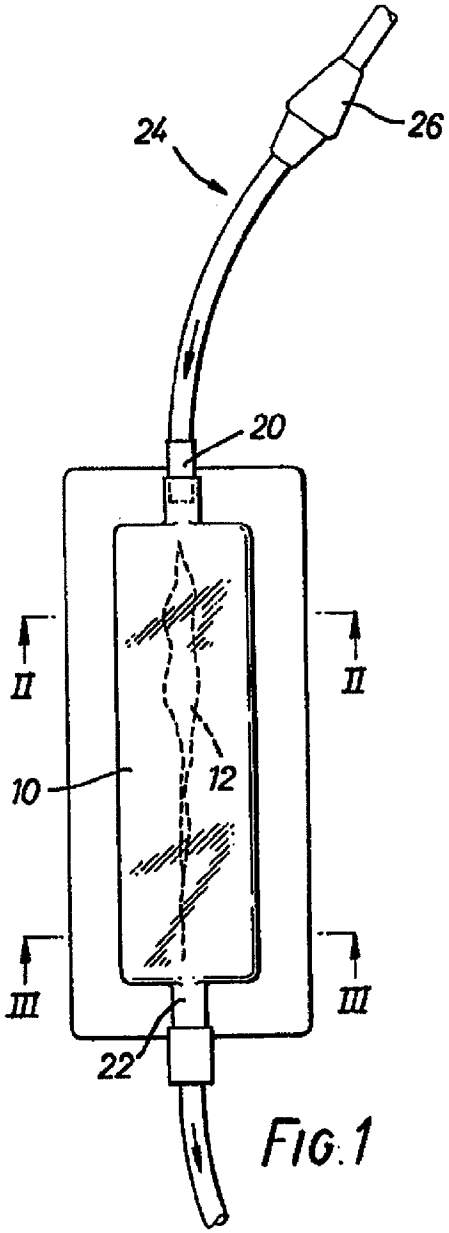

FIG. 1

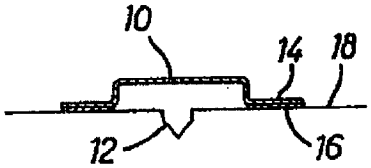

FIG. 2

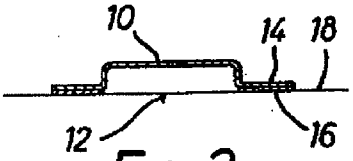

FIG. 3

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PATENT AGENTS